

# Electronic and magnetic properties of iron (III) dinuclear complexes with carboxylate bridges

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A series of dinuclear iron (III) complexes with carboxylate bridges, of the type  $[\text{Fe}_2\text{L}_2(\text{H}_2\text{O})_4](\text{NO}_3)_2(\text{H}_2\text{O})_m$  ( $m=1-3$ ), where L=Schiff base derived from L- $\alpha$ -amino acids and salicylaldehyde have been prepared and characterised by different spectroscopic techniques, magnetic susceptibility, conductivity, and electrochemical measurements. The dimeric iron complexes contain hexacoordinated iron (III), with the metal ion surrounded by water molecules, the salicylideneimine ligand, and the bridging carboxylate groups. The inequivalence of the iron atoms is detected by Mössbauer spectroscopy and this is reflected by the presence of two overlapping quadrupole doublets ( $\delta_1=0.52-0.67$  mms<sup>-1</sup>,  $\delta_2=0.64-0.80$  mms<sup>-1</sup>,  $EQ_1=0.38-0.80$  mms<sup>-1</sup>, and  $EQ_2=0.68-1.01$  mms<sup>-1</sup>), with an approximate intensity ratio of 1:1 for all complexes. The magnetic susceptibilities of the complexes were determined over the temperature interval 5-300 K and revealed a decrease in the effective magnetic moment with decreasing tempe